USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2006TX253G

Title: An Econometric Investigation of Urban Water Demand in the U.S.

Project Type: Research

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Congressional District: 17

Focus Categories: Management and Planning, Economic, Water Use

Keywords: urban water use, water demand analysis, water policy, water rates

Principal Investigator: Griffin, Ron (Texas A&M University)

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Non-Federal Matching Funds: $104,972

Abstract: Because water supplies are intensively utilized in much of the U.S., traditional visions of water supply problem-solving have reduced relevance as cities confront the challenges ahead. As a consequence, continued economic growth and the preservation of economic welfare for American cities likely depend on the cultivation of demand management strategies to augment supply development, which in turn is aided by a refined and comprehensive understanding of water demand. Without this information, local planners will be ill prepared in responding to important supply choices and crafting appropriate demand-influencing strategies, and policy makers will be deprived of clear projections of water use based on economic growth, rate modifications, population growth, and climatic conditions. Moreover, characterization of the water use of communities without consideration of economic factors fails to capture the element of individual choice that is the basis of demand management.

The first goals of this project are to gather monthly water use, water rate, climate, and economic activity data for several years and many large U.S. cities. For the more original elements of this data, especially water use and rates, further descriptive work will be undertaken to examine the setting of urban water use in America. The main goal of this project is to subject this data to econometric examination and

thereby estimate an economically specified model of water demand for the sectoral components of urban water demand: domestic, commercial, and industrial.

Procedurally, monthly records of public water provided will be obtained from approximately 500 geographically dispersed municipal utilities nationwide; subject selection will be informed by the aggregate water-use database (AWUDS) maintained by the USGS. The period of study will be the years 1995-2005, inclusively. The unique cross section will provide a more broadly applicable set of estimation parameters than previously available. This project considers household, commercial, and industrial use of water in major cities over the past decade, using a multidimensional price vector, volumetric delivery data informed and guided by the USGS National Water Use Information Program (NWUIP) and provided by direct contact with municipal utilities, climatic data from the National Climatic Data Center, and demographic and productive data from the U.S. Census, U.S. Economic Census, and Bureau of Labor Statistics.

Quantity demanded by the domestic, commercial, and manufacturing sectors will be modeled using panel-appropriate methods of econometric estimation. Sectoral literature reviews will place this approach in the context of previous research, identify selectable functional forms, and provide hypotheses. Numerical compilation and analysis will be conducted using the STATA statistical and data management software (StataCorp 2003). Further exploration of obtained models will yield more particularized findings, and the application of these results to typical planning scenarios will be outlined.
